FINAL FIELD SAMPLING AND ANALYSIS REPORT
ORGANIC SAMPLING
LONG LAKE - MITCHELL, ILLINOIS

BY:
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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
REGION 6 - FIELD OPERATIONS SECTION
BUREAU OF LAND
2009 MALL STREET
COLLINSVILLE, ILLINOIS 62234
OCTOBER 1999

FINAL FIELD SAMPLING AND ANALYSIS REPORT
LONG LAKE - MITCHELL ILLINOIS

TABLE OF CONTENTS

1.0 INTRODUCTION

The Illinois Environmental Protection Agency sampled zinc oxide sludge from the East Cooling Canal, sediment from Long Lake and a background soil sample at the Chemetco facility for the presents of dioxin and furan. This document is the Field Sampling and Analysis Report for sediment, soil and sludge from Chemetco and Long Lake.

The sampling event occurred on August 10, 1999 and was undertaken in accordance with the Site-Specific Sampling and Analysis Plan (SAP) For Dioxin and Furan in Sediment and Zinc Oxide, Chemetco, Inc. Hartford, Illinois and Long Lake - Mitchell, Illinois. The sampling team also followed the Bureau of Land Sampling Procedures Guidance Manual, September 1996. The sampling team from the Illinois Environmental Protection Agency's Collinsville Regional Office used ARDL in Mt. Vernon, Illinois as a contract laboratory. ARDL subcontracted the dioxin and furan sampling to Triangle Laboratory, Inc. in Durham, North Carolina.

The sampling event was undertaken by Collinsville Field Operation Section personnel Chris Cahnovsky, Tom Miller and John Senjan. Maps showing the sampling area layout and sample locations are provided in Appendix A. A Photograph Log of the sampling event is provided in Appendix B. Copies of the Chain of Custody forms and Unified Sampling Documents are provided in Appendix C and the laboratory reports are provided in Appendix D. A copy of the SAP is included as Appendix E.

On July 16, 1999, the Illinois Department of Natural Resources, Division of Fisheries obtained fish samples from Long Lake. The fish sampling was carried out in accordance with IDNR procedures and was not part of the SAP. The IDNR was contacted by the Illinois Environmental Protection Agency to obtain fish samples for dioxin and furan analysis.

2.0 SAMPLING PROCEDURES

2.1 Sediment

A total of three sediment samples were taken during this sampling event. The sediment samples were labeled X109 through X111. Samples X109 through X111 were obtained using separate and clean stainless steel bucket augers. The samples were removed from the augers using separate and clean stainless steel scoops. Each sample was placed into two 8-ounce glass jars.

Sample X109 was taken about 20 feet west of Containment Area #3. Sample X110 was taken on the east side of Containment Area #3. Sample X111 was taken about 15 feet north of Franko Lane. The sample depths of the sediment samples were 0-10 inches.

2.2 Soil

One background soil sample was taken in the front yard of Chemetco's "farmhouse". This background sample was labeled X112. Sample X112 was taken at a depth of 0 - 6 inches. This sample was taken using a stainless steel scoop and it as placed into two 8-ounce glass jars.

2.3 Zinc Oxide Sludge

One sample of zinc oxide sludge was taken from the bottom of the east side of the East Cooling Water Canal. This sample was taken using a stainless steel bucket auger at a depth of 0-10 inches. The sample was labeled X202 and placed in two 8-ounce glass jars.

2.4 Fish Samples

The IDNR used a shock boat to obtain the fish for sampling. The area samples was the section of the lake north of Franco Lane and south of the "slag road". In this section big buffalo, big carp and small buffalo were obtained. The IDNR filleted the fish in Grafton, Illinois.

The fish samples were in the possession of IDNR until August 9, 1999 when the Illinois Environmental Protection Agency took possession of the fish samples. The fish samples were taken to ARDL in Mt. Vernon by the Agency on August 10, 1999. The fish samples remained frozen at all times.

A sample of big buffalo and big carp from the north section of Long Lake were analyzed for dioxins and furans by ARDL, Inc. The big buffalo fillets were labeled 02420 and the carp fillets were labeled 02209.

2.5 Sample Preservation

All samples were sealed with evidence tape and placed in an iced cooler for shipment to ARDL, Inc. in Mt. Vernon, Illinois.

2.6 Sample Custody and Shipment

All sample containers were appropriately labeled in accordance with the SAP and the Bureau of Land Sampling Procedures Guidance Manual, September 1996. A Chain of Custody - DLPC/FOS Unified Sample Document accompanied the samples from the point of origin to ARDL. All samples collected by the Agency remained in the custody of Collinsville Regional Office personnel until shipment to ARDL. The samples were hand delivered to ARDL on August 10, 1999 and were received by ARDL with the evidence tape seals intact.

2.7 Equipment Decontamination

Since separate and clean sampling equipment was used to obtain each sample, no field documentation was needed.

3.0 RESULTS

The results are attached as Appendix D to this report. The sample results were forwarded to the Office of Chemical Safety's Toxicological Assessment Unit for interpretation. The following is a key to cross reference the Laboratory ID Numbers with the Field ID Numbers.

Lab ID Number	Field ID Number	Site Location
2448-1	X109	West of Containment #3
2448-2	X110	East of Containment #3
2448-3	X111	North of Franko Lane
2448-4	X112	By Farmhouse (Background)
2448-5	X202	ZnO East Cooling Water Canal
2448-6	02209	Carp Fillet
2448-7	02420	Bigmouth Buffalo Fillet

APPENDIX A

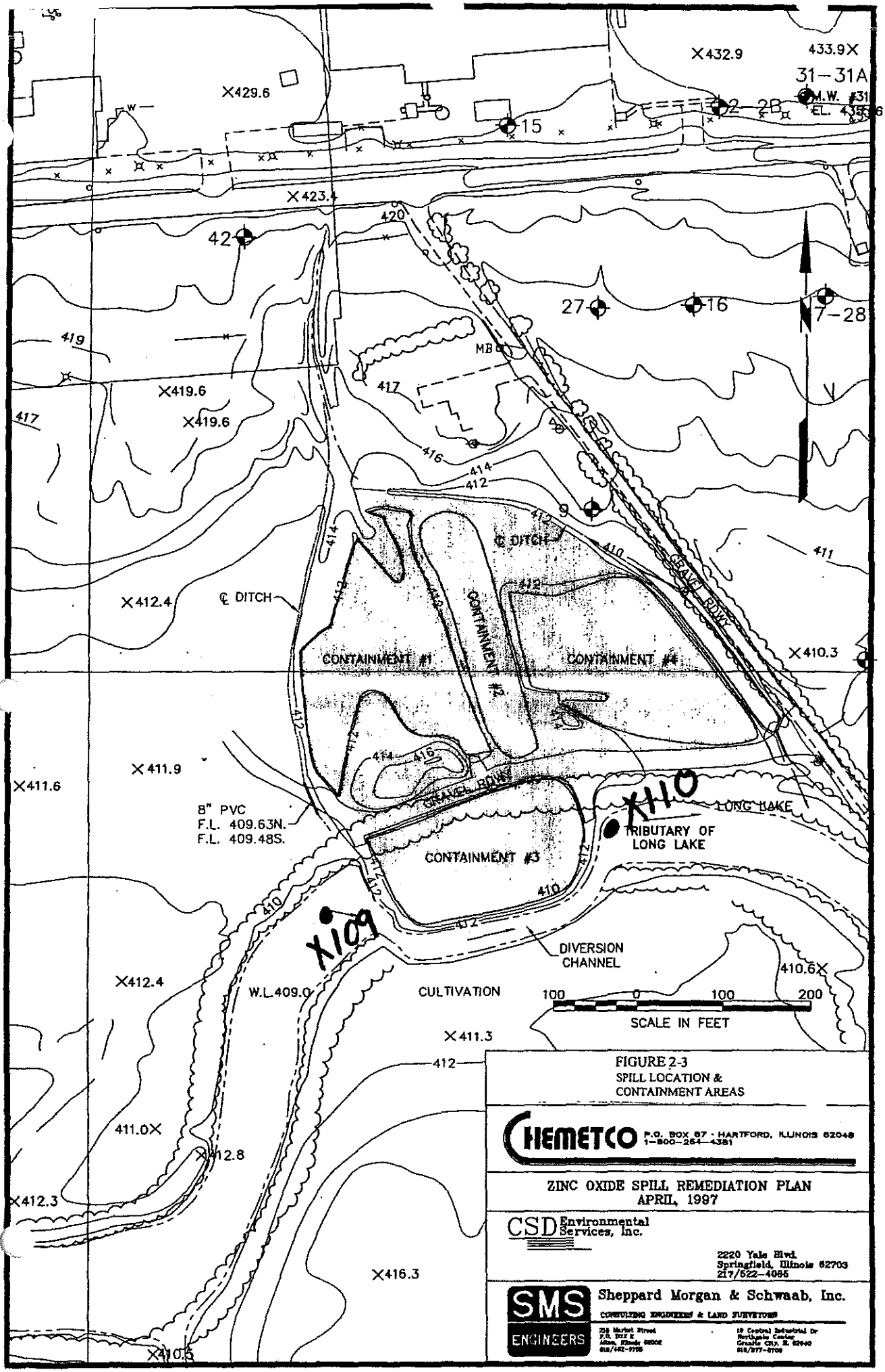


FIGURE 2-3
SPILL LOCATION &
CONTAINMENT AREAS

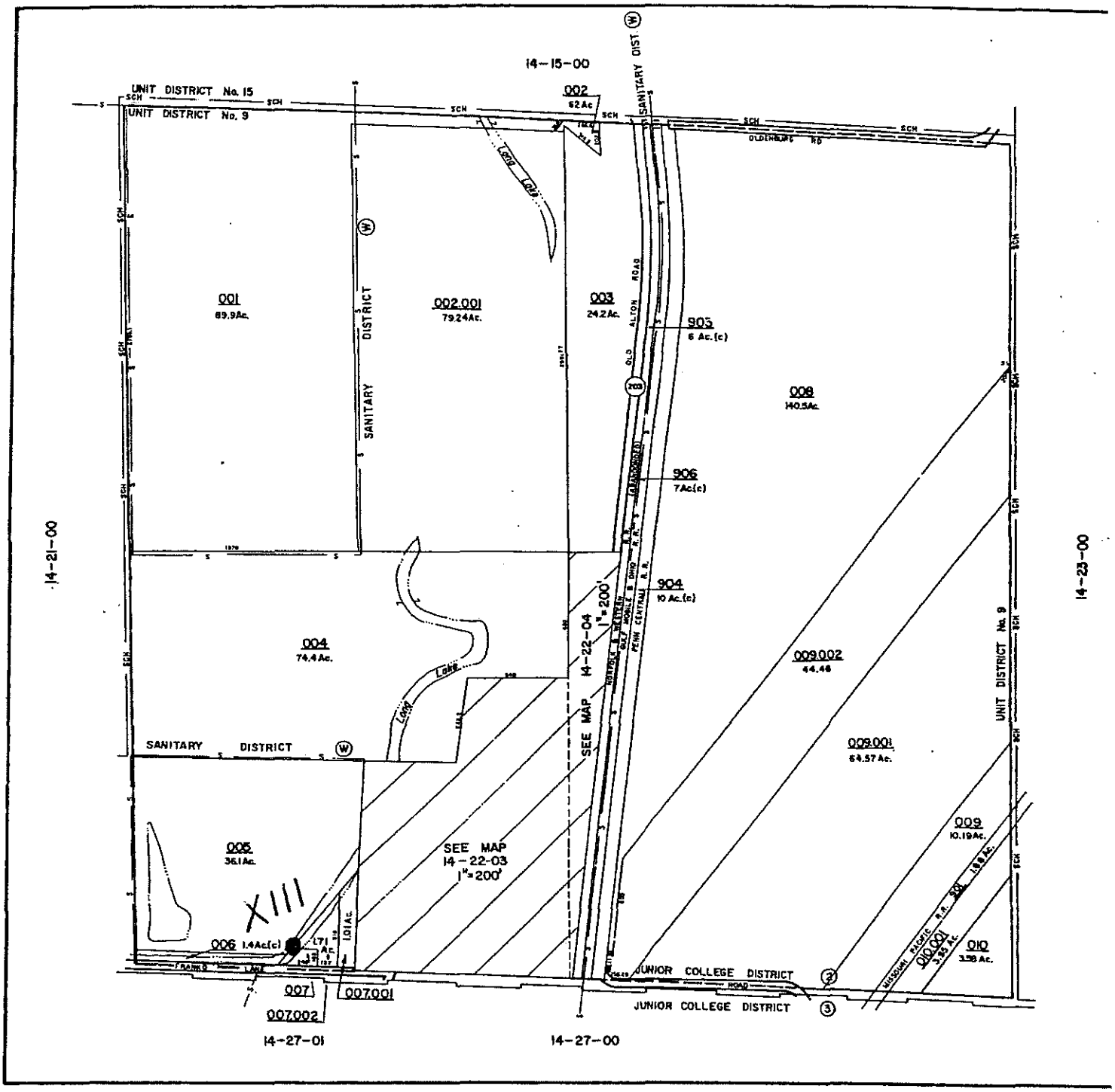
CHEMETCO P.O. BOX 67 - HARTFORD, ILLINOIS 62048
1-800-254-4381

ZINC OXIDE SPILL REMEDIATION PLAN
APRIL, 1997

CSD Environmental Services, Inc.
2220 Yale Blvd.
Springfield, Illinois 62703
217/522-4085

SMS ENGINEERS Sheppard Morgan & Schwaab, Inc.
CONSULTING ENGINEERS & LAND SURVEYORS

FIGURE 4-1



CHOUTEAU TOWNSHIP

MADISON COUNTY, ILLINOIS

LEGEND

STATE OR COUNTY LINE	EASEMENT LINE	ORIGINAL SUBDIVISION BLOCK NO.	(21)	DIMENSION IN FEET (Measured)	66.0 (m)
TOWNSHIP, CITY, TOWN LINE	PROPERTY LINE	ORIGINAL SUBDIVISION LOT & NO.	--+--/1/	INTERSTATE HIGHWAY	70
SECTION LINE	LAND HOOK	AREA IN ACRES (From Deed)	10.5 Ac.	U S HIGHWAY	66
HIGHWAY & STREET R/W	WATER	AREA IN ACRES (Calculated)	10 Ac.(c)	ILLINOIS STATE HIGHWAY	3
BLOCK LIMIT LINE	BLOCK NO.	DIMENSION IN FEET (From Deed)	16.5	COUNTY HIGHWAY	16
RAILROAD R/W	PARCEL NO. 023	DIMENSION IN FEET (Scaled)	66 (c)	STREET OR TOWN ROAD	BY NAME

SPECIAL DISTRICTS

TYPE	SYMBOL	CODE	NAME
FIRE	—F—	5	MYCHEL
LIGHT	—L—		
SCHOOL	—SCH—	9 2	UNIT DISTRICT JUNIOR COLLEGE DISTRICT No. 536
SEWER	—S—	W	SPECIAL SERVICE AREA NO 1
WATER	—W—		
PARK	—P—		
VOTING	—V—		

CLT
BALANCED
GOVERNMENTAL
SERVICES

Tax Mapping Division

COLE LAYER TRUMBLE COMPANY
AN AMERICAN APPRAISAL ASSOCIATES CO.

REAL PROPERTY MAP
PREPARED FOR
MADISON COUNTY
BOARD MEMBERS
Maps & Plats Department
COUNTY OF MADISON

DATE OF MAP: APRIL 23, 1973
DATE OF REVISION:
SCALE: 1"=400'

16	15	14
21	22	23
28	27	26

N

CONGRESSIONAL TOWNSHIP NO.

SECTION 22
TOWN 04 NORTH, RANGE 09 WEST
14-22-00
MAP NUMBER

FIGURE 4-2

1100748

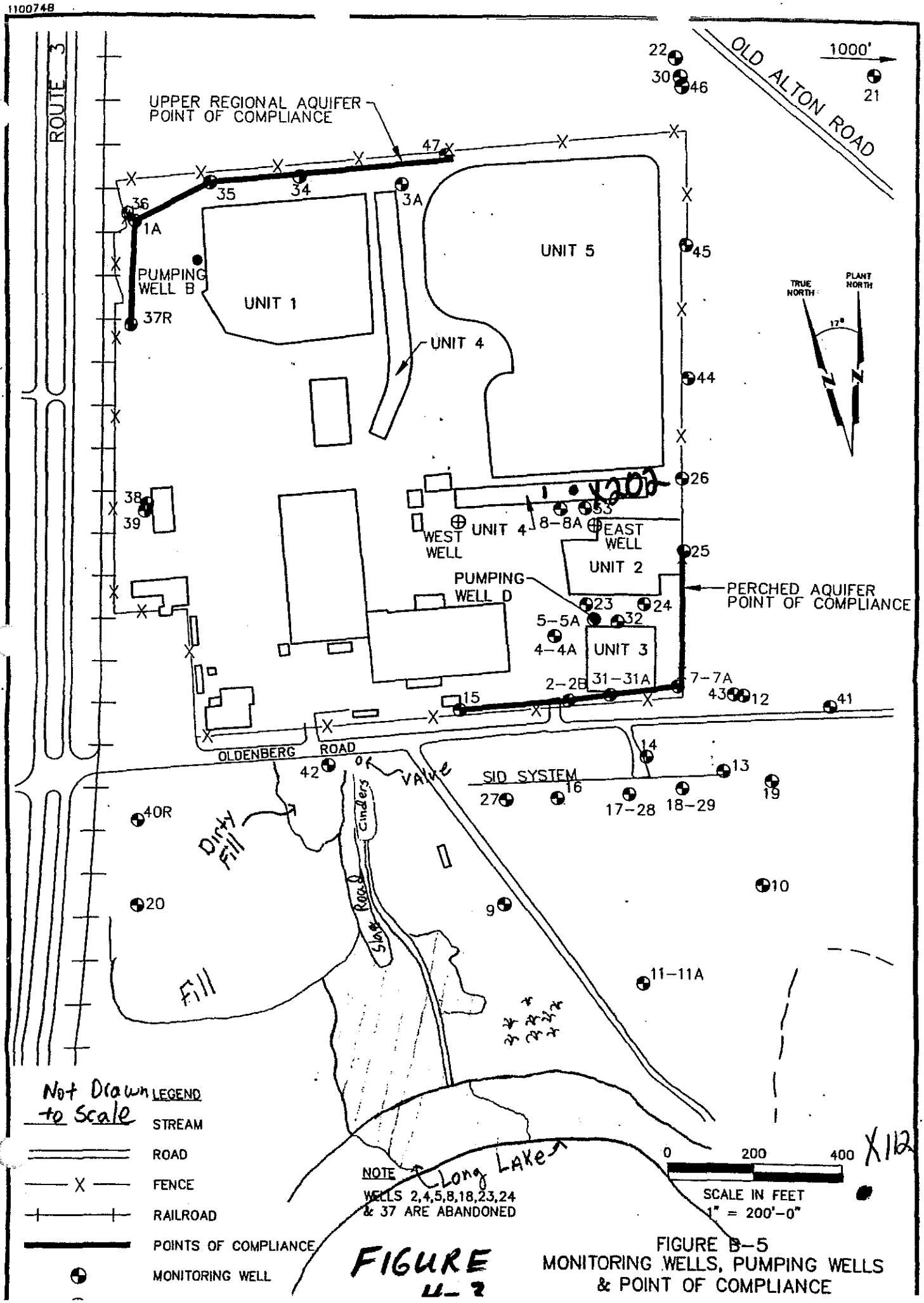


FIGURE
4-2

FIGURE B-5
MONITORING WELLS, PUMPING WELLS
& POINT OF COMPLIANCE

APPENDIX B

INSPECTION PHOTOS

DATE: August 10, 1999	SITE #: 1198010003	CO.: Madison
TIME: 08:15 - 11:05	SITE NAME: Chemetco, Inc.	

PHOTOGRAPH TAKEN BY: Chris Cahnovsky

COMMENTS: Pictures taken toward: Northwest

Sampling location of X202, east

---

end of East Cooling Canal.

ROLL#: 3502 | **PHOTO#:** 4

DATE: August 10, 1999
TIME: 08:15-11:05

PHOTOGRAPH TAKEN BY: Chris Cahnovsky

COMMENTS: Pictures taken toward: South

Sampling location of X109,

---

about 20 feet West of

Containment Area #3.

ROLL#: 3502 | **PHOTO#:** 5

cnc

FOS

INSPECTION PHOTOS

DATE: August 10, 1999	SITE #: 1198010003	CO.: Madison
TIME: 08:15 - 11:05	SITE NAME: Chemetco, Inc.	

PHOTOGRAPH TAKEN BY: Chris Cahnovsky

COMMENTS: Pictures taken toward: Southeast

Sample location of X110, east side of Containment Area #3.

ROLL#: 3502 **PHOTO#:** 6

DATE: August 10, 1999

TIME: 08:15-11:05

PHOTOGRAPH TAKEN BY: Chris Cahnovsky

COMMENTS: Pictures taken toward: Southeast

Sample location of X110, east side of Containment Area #3.

ROLL#: 3502 **PHOTO#:** 7

cnc

FOS

INSPECTION PHOTOS

DATE: August 10, 1999	SITE #: 1198010003	CO.: Madison
TIME: 08:15 - 11:05	SITE NAME: Chemetco, Inc.	

PHOTOGRAPH TAKEN BY: Chris Cahnovsky

COMMENTS: Pictures taken toward: North

Sample location of X112, background sample by farmhouse.

ROLL#: 3502 **PHOTO#:** 8

DATE: August 10, 1999

TIME: 08:15-11:05

PHOTOGRAPH TAKEN BY: Chris Cahnovsky

COMMENTS: Pictures taken toward: Northwest

Sample location of X111 north of Franko Lane.

ROLL#: 3502 **PHOTO#:** 9

cnc

FOS

APPENDIX C

Illinois Environmental Protection Agency Chain of Custody

Preservative Codes	Container Description: Soil	Container Description: Aqueous
1. None		
2. VOA - HCl	VOC - 2 oz. glass (2)	VOC - 40 mL glass (2)
3. Metals - HNO3	SVOC - 8 oz. glass (1)	SVOC, Pest/PCB - 80 oz amber glass (1)*
4. Cyanide - NaOH	Pest/PCB - 8 oz. glass (1)	
5. Other	Inorganics - 16 oz. glass (1)	Inorganics - 1 qt. plastic (1)
6. Other		* duplicate 1 out of 10

Fund:	LPC#:	Locality:	Cooler Initially Sealed By:		Date Initially Sealed
CHEMETCO	1198010003 0098010003	Madison	[signature]		7-27-99
Section:	**Site Name:**	**Project Manager:**		**Phone Number:**	**Initial Cooler Seal #**
	Chemetco Inc.	Chris Cahnovsky		618/346-5120	938

Lab Sample No.	Parameter Group: SW846 8290A							Field Sample Number	Matrix	No. of Bottles	Date Collected	Time Collected (24 hr clock)	Sampler's Initials	Special Notations
	X							X109	Soil	2	8/10/99	09:38	TWM	West of Containment #3
	X							X110	Soil	2	8/10/99	09:58	TWM	East of Containment #3
	X							X111	Soil	2	8/10/99	10:52	TWM	North of Franko Lane
	X							X112	Soil	2	8/10/99	10:25	TWM	by farmhouse (background)
	X							X202	Sludge	2	8/10/99	08:55	TWM	ZnO East Cooling Canal
	X							02209	Fish		7/16/99	13:26	RJM	Carp Fillet
	X							02420	Fish		7/16/99	13:26	RJM	Bigmouth Buffalo Fillet

Opener: I certify that I received the sample shipping container with the shipping container sealed and intact

Cooler Opened by:	Seal No:	Date:	Time:	Intact
Chris Cahnovsky	0000938	7/28/99	9:30	(Y)-N
				Y-N

Sealer: I certify that the samples listed above were collected in my presence and sealed by me

Cooler Sealed By:	Seal No.:	Date:	Time:
Chris Cahnovsky	0000251	8/10/99	2:55

[illegible]

Received for Lab by:	Seal No:	Date:	Time:	Intact
[signature]	0000251	8/10/99	1430	(Y)-N

Lab Comments:

Supervisor Releasing Results: Date:

Sample Courier: Chris Cahnovsky (IEPA)

Turnaround Time Requested: 30-days

Samplers: Tom Miller, John Senjan, Chris Cahnovsky

THE ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION
RECEIPT FOR SAMPLES

Site Inventory #: 1 1 9 8 0 1 0 0 0 3 Facility Name: Chemetco, Inc.

Federal I.D. #: I L D 0 4 8 8 4 3 8 0 9 County: Madison

Sample #:	Consisting of the Indicated # of Bottles	Date Collected
X109	2	8/10/99
X110	2	8/10/99
X111	2	8/10/99
X112	2	8/10/99
X202	2	8/10/99

Duplicate Samples requested: [XX] Yes [ ] No

Receipt for samples listed above is hereby acknowledged.

X [signature] Contractual Environmental Manager 8/10/99
Signature Owner/Operator/Agent — Title — Date

[signature] EPS 8/10/99
Agency Representative — Title — Date

COMMENTS: Dioxins and Furans

NOTE: White Copy - Division File
Yellow Copy - Regions
Pink Copy - Owner/Operator/Agent

GS:TH:lhh:AC-XI

Illinois EPA - DWPC MONITORING UNIT LAB SHEET
FISH TISSUE SAMPLE

FIELD ID NUMBER

09 FUNDING CODE W P F 6 10 AGENCY ROUTING _0_1 12 FILE CODE F I S H 13 SAMPLE TYPE _1 15 REPORT INDICATOR _B

16 STATION CODE _ _ _ _ _ _ _ _ _ _ 17 SAMPLING PROGRAM 1 1

18 STATION DESCRIPTION Northern section of Long Lake

19 DATE: 9 9 0 7 1 6 (Y Y M M D D) 20 TIME: 0 1 2 6 (=Fillet) (circle) 0 0 5 9 =Whole 21 COLLECTED BY: R J M 22 DELIVERED BY: _ _ _

23 COMMENTS: Shallow silt filled basin on north end of Long Lake

03 PARAMETER GROUP F I S H 1

FIELD PARAMETERS	TEST	RESULTS
Depth	5 1 1 F 0	_ _ _ _ _
Number of Individ.	5 1 7 F 0	_ _ _ _ _
Sample Weight lbs.	5 1 8 F 0	_ _ _ _ _
Sample Length in.	5 2 5 F 0	_ _ _ _ _
Species Numeric	5 1 9 F 0	_ _ _ _
Species Alpha	5 2 0 F 0	_ _ _ _ _
Anatomy Code Num.	5 2 1 F 0	_ _ _ _ _
Analyzing Agency	5 2 2 F 0	_ _ _ _ _

ADDITIONAL TESTS:

PARAMETER	TEST	RESULT
_____	_____	_ _ _ _ _
_____		

Attach lab

Program: FISH CONTAMINANT MONITORING

Circle One: WHOLE FILLET

Fish Species: CARP

Stream or Lake Name: North Long Lake

Twp: 4N Range: 9W Sec: 34

County: Madison

Sample Location: Northern Long Lake

Sample Collected By: R. Maher B. Williamson

Transported By: _____

Received By: _____

Sampling Technique: AC Boat shock

Please Return to:
Illinois EPA
DWPC #15 Planning Sec
P.O. Box 19726

GPS
Latitude
_ _

Field staff fill out top of sheet and this section.

Lengths: Circle One: (mm) cm in

505, 440, ~~310~~ 550 (mm)

Weights: Circle One: (grams) lbs

1680, 1140, ~~780~~ 2270 (mm)

FOR LABORATORY USE ONLY
LAB ID NO

Sample Received By: _____

Date Received: _____

Time Received: _____ AM PM

Date Analysis Completed: _____

Date Results Forwarded: _____

ction: _____

isor: _____

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
OFFICE OF HEALTH PROTECTION
DIVISION OF FOOD, DRUGS AND DAIRIES
PHONE: (217) 785-2439

Sample No. 02209 DATE _____, 19__

Sample of _____

Inspector R. Maher

Firm

Representative IDNR

Replaces

Illinois EPA - DWPC MONITORING UNIT LAB SHEET
FISH TISSUE SAMPLE

FIELD ID NUMBER

09 FUNDING CODE W P F 6   10 AGENCY ROUTING 0 1   12 FILE CODE F I S H   13 SAMPLE TYPE 1   15 REPORT INDICATOR B

16 STATION CODE ___________   17 SAMPLING PROGRAM 1 1

18 STATION DESCRIPTION Northern section of Long Lake

19 DATE: 9 9 0 7 1 6 (Y Y M M D D)   20 TIME: 0 1 2 6 =Fillet (circled) (circle) 0 0 5 9 =Whole   21 COLLECTED BY: R J M   22 DELIVERED BY: ___

23 COMMENTS: Shallow silt Filled basin on north end of Long Lake

03 PARAMETER GROUP F I S H 1

FIELD PARAMETERS	TEST	RESULTS
Depth	5 1 1 F 0	
Number of Individ.	5 1 7 F 0	
Sample Weight lbs.	5 1 8 F 0	
Sample Length in.	5 2 5 F 0	
Species Numeric	5 1 9 F 0	
Species Alpha	5 2 0 F 0	
Anatomy Code Num.	5 2 1 F 0	
Analyzing Agency	5 2 2 F 0	

ADDITIONAL TESTS:

PARAMETER	TEST	RESULT

Attach 1

Program: FISH CONTAMINANT MONITORING

Circle One: WHOLE FILLET

Fish Species: Bigmouth Buffalo (Lg)

Stream or Lake Name: Long Lake North

Twp: 4N Range: 9W Sec: 34

County: Madison

Sample Location: Northern Long Lake

Sample Collected By: R. Maher, B. Williamson

Transported By: R. Maher

Received By: ___

Sampling Technique: AC Boat Shock

Please Return to:
Illinois EPA
DWPC #15 Planning Sec
P.O. Box 19726

GPS
Latitude

Field staff fill out top of sheet and this section.

Lengths: Circle One: (mm) cm in
550 480 535

Weights: Circle One: (grams) lbs
2270 1900 2530

FOR LABORATORY USE ONLY
LAB ID NO

Sample Received By: ___

Date Received: ___

Time Received: ___ AM PM

Date Analysis Completed: ___

Date Results Forwarded: ___

Section: ___

...rvisor: ___

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
OFFICE OF HEALTH PROTECTION
DIVISION OF FOOD, DRUGS AND DAIRIES
PHONE: (217) 785-2439

Sample No. 02420 DATE 7/16, 1999

Inspector R. Maher

Firm

...mple of [illegible]

Representative [illegible]

Replace

APPENDIX D

S.F. Tech

ARDL inc. **applied research & development laboratory**

CHEMISTRY · BIOLOGY · PHYSIOLOGY
ENGINEERING · ENVIRONMENTAL ANALYSIS

27 September 1999

Mr. Ron Turpin
Division of Laboratories # 4
Illinois Environmental Protection Agency
1340 N. 9th Street
Springfield, IL 62702

SUBJECT: Data Package Submittal
Facility: ChemetCo, Inc.
ARDL ID No. 2448
Site Inventory No. 11980100003

Dear Mr. Turpin:

Enclosed please find ARDL's data package for analyses performed on samples delivered to our laboratory on 8/10/99. The samples were sent to Triangle Laboratories for Dioxin analysis on 8/11/99. The data package consists of the following:

1. Letter of Transmittal
2. Tabulated Analytical Results
3. Chain-of-Custody Documentation
4. Data Package – Paginated and submitted in the following order:

   a. Volume 1- Soil - Dioxin Analysis Data Package
   b. Volume 2- Fish - Dioxin analysis Data Package

RECEIVED
IEPA
OCT 01 1999
COLLINSVILLE OFFICE

I have forwarded one (1) copy of the sample results for this project to Sue Doubet, IEPA.

We appreciate the opportunity to be of service to the IEPA.

Sincerely yours,

D Gillespie

Daniel J. Gillespie
Technical Services Manager

DJG/jcm

Enclosure

RECEIVED
SEP 28 1999
IEPA/BOL

P.O. Box 1566 · 400 Aviation Drive · Mt. Vernon, Illinois 62864 · (618) 244-3235 · FAX (618) 244-1149

Data File	P993217	P993218	P993219	P993220
Sample ID	2448-1	2448-2	2448-3	2448-4
	X109	X110	X111	X112
Units	ppt	ppt	ppt	ppt
Extraction Date	08/22/1999	08/22/1999	08/22/1999	08/22/1999
Analysis Date	09/09/1999	09/09/1999	09/09/1999	09/09/1999
Instrument	P	P	P	P
Matrix	SOIL	SOIL	SOIL	SOIL
Extraction Type				
Analytes				
2378-TCDF	34.2	10.4	1.4 B	0.86 J
Internal Standards Percent Recovery Summary (% Rec)				
13C12-2378-TCDF	91.3	102	118	97.3

Data File	P993221
Sample ID	2448-5
	X202
Units	ppt
Extraction Date	08/22/1999
Analysis Date	09/09/1999
Instrument	P
Matrix	SOIL
Extraction Type	

Analytes	
2378-TCDF	121

Internal Standards Percent Recovery Summary (% Rec)

13C12-2378-TCDF	93.6

Data File	U311301	S994675	S994676	S994677
Sample ID	TLI Blank	2448-1	2448-2	2448-3
		X109	X110	~~X110~~ X111
Units	ppt	ppt	ppt	ppt
Extraction Date	08/22/1999	08/22/1999	08/22/1999	08/22/1999
Analysis Date	09/03/1999	09/17/1999	09/17/1999	09/17/1999
Instrument	U	S	S	S
Matrix	SAND	SOIL	SOIL	SOIL
Extraction Type				
Analytes				
2378-TCDD	(0.1)	2.6	2.2	0.93 J
12378-PeCDD	(0.2)	8.6	3.8 J	1.3 J
123478-HxCDD	(0.2)	12.1	4.6 J	1.9 J
123678-HxCDD	(0.2)	25.2	9.4	3.9 J
123789-HxCDD	(0.2)	38.3	15.3	5.4
1234678-HpCDD	{0.34} J	333	153	93.2
OCDD	0.82 J	3580	3050	2580
2378-TCDF	(0.1)	136	36.9	3.1
12378-PeCDF	(0.1)	33.6	10.5	{1.7} J
23478-PeCDF	(0.1)	65.7	18.4	1.7 J
123478-HxCDF	0.34 J	236	56.2	3.1 JB
123678-HxCDF	(0.1)	81.7	20.8	2.9 J
234678-HxCDF	(0.1)	140	34.1	3.1 J
123789-HxCDF	(0.2)	10.2	3.6 J	(0.2)
1234678-HpCDF	0.48 J	480	124	11.5
1234789-HpCDF	(0.3)	112	28.7	2.1 J
OCDF	(0.3)	757	180	25.6
TOTAL TCDD	(0.1)	120	43.0	13.4
TOTAL PeCDD	0.59	195	80.8	25.8
TOTAL HxCDD	0.59	353	142	60.4
TOTAL HpCDD	0.28	683	346	246
TOTAL TCDF	(0.1)	862	212	24.7
TOTAL PeCDF	(0.1)	702	192	17.8
TOTAL HxCDF	0.34	956	234	34.1
TOTAL HpCDF	0.48	888	238	34.0
Internal Standards Percent Recovery Summary (% Rec)				
13C12-2378-TCDF	67.7	83.5	91.9	107
13C12-2378-TCDD	86.0	83.7	91.9	112
13C12-PeCDF 123	86.4	90.0	96.2	102
13C12-PeCDD 123	94.7	87.0	93.1	94.7
13C12-HxCDF 678	93.2	93.6	99.7	110
13C12-HxCDD 678	109	93.9	103	106
13C12-HpCDF 678	94.1	110	114	111
13C12-HpCDD 678	108	108	123	109
13C12-OCDD	98.5	96.6	118	84.5

Data File	S994678		S994679	
Sample ID	2448-4		2448-5	
	X112		X202	
Units	ppt		ppt	
Extraction Date	08/22/1999		08/22/1999	
Analysis Date	09/17/1999		09/17/1999	
Instrument	S		S	
Matrix	SOIL		SOIL	
Extraction Type				
Analytes				
2378-TCDD	(0.2)		2.8	PR
12378-PeCDD	(0.3)		10.1	
123478-HxCDD	0.48	J	13.1	
123678-HxCDD	0.95	J	26.6	
123789-HxCDD	1.7	J	44.1	
1234678-HpCDD	16.6		223	
OCDD	333		580	
2378-TCDF	2.5		321	
12378-PeCDF	0.95	J	63.9	
23478-PeCDF	{1.5}	J	146	
123478-HxCDF	4.3	JB	378	
123678-HxCDF	1.7	J	141	
234678-HxCDF	2.9	J	282	
123789-HxCDF	(0.2)		14.8	PR
1234678-HpCDF	10.5		858	
1234789-HpCDF	2.2	J	212	
OCDF	13.7		1920	
TOTAL TCDD	4.1		180	
TOTAL PeCDD	9.7		275	
TOTAL HxCDD	19.9		390	
TOTAL HpCDD	33.3		462	
TOTAL TCDF	8.4		1370	
TOTAL PeCDF	11.3		1170	
TOTAL HxCDF	18.6		1490	
TOTAL HpCDF	20.4		1620	
Internal Standards Percent Recovery Summary (% Rec)				
13C12-2378-TCDF	90.0		85.0	
13C12-2378-TCDD	88.3		84.4	
13C12-PeCDF 123	88.7		92.9	
13C12-PeCDD 123	90.7		89.8	
13C12-HxCDF 678	91.4		90.1	
13C12-HxCDD 678	96.8		91.5	
13C12-HpCDF 678	107		103	
13C12-HpCDD 678	117		98.4	
13C12-OCDD	102		73.0	

{Estimated Maximum Possible Concentration}, (Detection Limit).

Data File	T995664	T995691	T995692
Sample ID	TLI Fish Blank	2448-6 02209	2448-7 02420
Units	ppt	ppt	ppt
Extraction Date	08/31/1999	08/31/1999	08/31/1999
Analysis Date	09/11/1999	09/13/1999	09/13/1999
Instrument	T	T	T
Matrix	FISH	FISH	FISH
Extraction Type			
Analytes			
2378-TCDD	(0.07)	(0.05)	(0.05)
12378-PeCDD	(0.08)	(0.06)	(0.06)
123478-HxCDD	(0.09)	(0.04)	(0.04)
123678-HxCDD	(0.09)	(0.04)	(0.04)
123789-HxCDD	(0.09)	(0.04)	(0.05)
1234678-HpCDD	(0.1)	0.23 J	(0.16) J
OCDD	0.26 J	1.6 JB	2.0 JB
2378-TCDF	(0.05)	(0.14) J	0.21 J
12378-PeCDF	(0.06)	(0.04)	0.69 J
23478-PeCDF	(0.06)	(0.04)	(0.04)
123478-HxCDF	(0.06)	0.10 J	(0.04)
123678-HxCDF	(0.06)	(0.03)	(0.04)
234678-HxCDF	(0.06)	(0.04)	(0.04)
123789-HxCDF	(0.07)	(0.04)	(0.05)
1234678-HpCDF	(0.08)	(0.05)	(0.06)
1234789-HpCDF	(0.1)	(0.07)	(0.09)
OCDF	(0.1)	(0.1)	(0.1)
TOTAL TCDD	(0.07)	(0.04)	(0.05)
TOTAL PeCDD	(0.08)	(0.06)	(0.06)
TOTAL HxCDD	(0.09)	(0.04)	(0.04)
TOTAL HpCDD	(0.1)	0.23	(0.16)
TOTAL TCDF	(0.15)	0.14	0.21 X
TOTAL PeCDF	(0.06)	(0.04)	1.1
TOTAL HxCDF	(0.06)	0.10	0.40
TOTAL HpCDF	(0.09)	(0.06)	(0.07)
Other Standards Percent Recovery Summary (% Rec)			
37Cl-TCDD	58.3	94.8	93.0
Other Standards Percent Recovery Summary (% Rec)			
13C12-PeCDF 234	79.4	94.9	92.1
13C12-HxCDF 478	76.1	73.2	67.7
13C12-HxCDD 478	82.9	90.7	94.8
13C12-HpCDF 789	89.1	87.5	85.2
Other Standards Percent Recovery Summary (% Rec)			
13C12-HxCDF 789	86.0	87.8	87.5
13C12-HxCDF 234	86.6	89.5	93.2
Internal Standards Percent Recovery Summary (% Rec)			
13C12-2378-TCDF	63.7	80.4	77.9
13C12-2378-TCDD	63.8	93.6	92.0

Data File	T995664	T995691	T995692
Sample ID	TLI Fish Blank	2448-6	2448-7
		02209	02420
Units	ppt	ppt	ppt
Extraction Date	08/31/1999	08/31/1999	08/31/1999
Analysis Date	09/11/1999	09/13/1999	09/13/1999
Instrument	T	T	T
Matrix	FISH	FISH	FISH
Extraction Type			
Internal Standards	Percent Recovery	Summary (% Rec)	
13C12-PeCDF 123	68.4	80.5	74.3
13C12-PeCDD 123	67.9	77.7	71.0
13C12-HxCDF 678	75.8	70.8	64.5
13C12-HxCDD 678	79.8	91.0	95.9
13C12-HpCDF 678	82.2	75.0	68.4
13C12-HpCDD 678	90.2	81.5	83.8
13C12-OCDD	84.0	73.3	71.8

{Estimated Maximum Possible Concentration}, (Detection Limit).

APPENDIX E

SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN FOR DIOXIN AND FURAN IN SEDIMENTS AND ZINC OXIDE CHEMETCO, INC. HARTFORD, ILLINOIS LONG LAKE - MITCHELL, ILLINOIS

BY:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
REGION 6 - FIELD OPERATIONS SECTION
BUREAU OF LAND
2009 MALL STREET
COLLINSVILLE, ILLINOIS 62234
JULY 1999

TABLE OF CONTENTS

SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN
SEDIMENT AND SURFACE WATER
LONG LAKE - MITCHELL, ILLINOIS

1.0 INTRODUCTION

The following constitutes a Site-Specific Field Sampling and Analysis Plan (SAP) for chlorinated dioxin and furan levels of zinc oxide produced by Chemetco, Inc. and in the sediments of the northern portion of Long Lake in unicorporated Mitchell, Illinois.

On April 12, 1987, the United States Environmental Protection Agency sampled the polish pits at Chemetco for the presence of dioxins and furans. The USEPA found dioxin concentrations at a Toxicity Equivalence Factor of 3.4 ppb, 2,3,7,8-TCDD equivalents in the polish pits. The polish pits manage zinc oxide collected from Chemetco's Venturi scrubber system. On September 18, 1996, the IEPA and the USEPA discovered that Chemetco, Inc. was discharging a zinc oxide and water slurry through a 10-inch pipe into a ditch tributary to Long Lake, Long Lake, and its adjacent wetlands. According to the April 21, 1999 United States District Court for the Southern District of Illinois Indictment of Chemetco and its former and present employees, the source of discharge was zinc oxide and water from the East Canal.

The discovery of the discharge has led to the criminal indictment of Chemetco and several of its former and present employees. These indictments were the source of many stories in the local newspapers. Since these stories were published, the Illinois Environmental Protection Agency has received numerous calls from local citizens who live around Long Lake. The citizens and news media are concerned about the possible human health risks associated with the illegal discharge.

Due to the fact that in 1987 the USEPA found dioxin in the zinc oxide and from 1986 to 1996 zinc oxide was discharged to Long Lake, the Agency's Toxicological Assessment Unit raised concerns about dioxins and furans in Long Lake sediments and the fish population. Chemetco also smelts a large variety of low grade copper bearing scrap. Some of the scrap charged to the furnaces include coated wire, plastics and computer parts.

Chemetco responded to this discharge by impounding an impacted section of Long Lake under an Army Corp of Engineers 404 Permit pursuant to the Clean Water Act. According to Chemetco, the approximate area of the release was 300 feet long by 450 feet wide. Chemetco constructed four Containment Areas. The impounded section of Long Lake, Containment Area 3, was pumped dry and zinc oxide, vegetation and contaminated soil were removed and place in Containment Area #1. According to Chemetco, Containment Area 1 contains about 1,500 cubic yards of zinc oxide. The water from the impounded portion Long Lake was pumped to Containment Area 2. Containment Area 2 contains about 575,000 gallons of water.

On November 17, 1997, Chemetco submitted a plan titled Zinc Oxide Spill Remediation Plan Phase I - Material Removal and Partial Closure. This plan was not approved by the Agency. Chemetco submitted a revised plan in April 1998. This plan was approved by the Agency with conditions. However, Chemetco appealed this approval to the Illinois Pollution Control Board. As of October 22, 1998, Chemecto has not removed any waste zinc oxide from the release area for proper disposal.

2.0 PURPOSE AND OBJECTIVE

This SAP has been prepared to allow for the collection and analysis of sediments in Long Lake and zinc oxide from the East Canal for dioxins and furans. Samples will be taken at the point of release to Long Lake and at Franko Lane in unincorporated Madison County. A zinc oxide sample will be obtained from the East Canal.

3.0 SITE DESCRIPTION

The section of Long Lake that is the subject of this SAP is a long narrow body of water that extends from the Mississippi River side of the levee in Hartford, Illinois to the Stanley Ditch just north of Interstate 270. The north section of Long Lake begins on the west side of the Mississippi River levee along Illinois Route 3. This portion of lake flows under Rt. 3 and extends past the Chemetco facility. The lake extends to just north of Interstate 270 where to flows into the Stanley Ditch. Stanley Ditch flows to the Melvin Price Port Authority where it is pumped to the Mississippi River. The lake in this area is intermittent and has depths of between six inches and three feet.

Portions of Long Lake are considered Lacustrine Systems. Lacustrine Systems are usually made up of wetlands and deepwater habitats with all of the following characteristics: (1) within topographic depression or a dammed river channel; (2) lacking trees, shrubs and persistent emergents and; (3) total area exceeds 20 acres. Lacustrine Systems include permanently flooded lakes and reservoirs. Portions of Long Lake are also considered Palustrine Systems. Palustrine Systems includes all non-tidal wetlands dominated by trees, shrubs and persistent emergents. Palustrine Systems also include wetlands lacking such vegetation, but all of the following characteristics: (1) less than 20 acres; (2) active wave-formed or bedrock shoreline features lacking; and (3) water depth in the deepest part of the basin less than 6.6 feet at low water[1]. The portions of Long Lake being sampled under this SAP are primarily Palustrine Systems with intermittent water with depths of seven feet or less.

4.0 SEDIMENT SAMPLING

A total of three sediment samples will be collected from Long Lake for dioxin and furan levels. One sample will be taken of the sediment east of Containment Area #3, one sample will be taken west of Containment #3 and the third sample will be taken north of Franko Lane. A background soil sample will be collected in an area which does not appear to have been impacted by potential releases from the Chemetco facility. The sample locations are shown on Figures 4-1, 4-2 and 4-3. A summary of the analytical methods is presented in Table 9-1.

The sampling team will follow the sampling procedures outlined in the Bureau of Land Sampling Procedures Guidance Manual, September 1996. Specifically, Section VI: Soil and Section X: Sediment will be followed. The sediment samples and one soil sample will be given the field sample numbers X109, X110, X111 and X112, respectively.

The sediment samples will be obtained using a pre-cleaned stainless steel hand mud auger. The sample will be transferred directly into a sample container or into a stainless steel bowl prior to placement into a sample container. The soil sample will be collected using a pre-cleaned stainless steel hand trowel. The sample will be transferred directly into a sample container or into a stainless steel bowl prior to placement into a sample container.

5.0 ZINC OXIDE SLUDGE SAMPLING

One zinc oxide sample will be taken from the East Cooling Canal. This sample will be labeled X202. The location of this sample is shown in Figure 4-3. The zinc oxide sample will be collected using a pre-cleaned stainless steel hand trowel. The sample will be transferred directly into a sample container or into a stainless steel bowl prior to placement into a sample container.

6.0 QUALITY CONTROL SAMPLE

One matrix spike/,matrix spike duplicate (MS/MSD) sample will be collected for every 20 samples of each matrix collected. These MS/MSD samples will be analyzed for the same constituents as those in the sample matrix being analyzed.

Laboratory quality control requirements are outlined in the Illinois Environmental Protection Agency's Contract Laboratory Program.

7.0 DECONTAMINATION

Since separate sampling equipment will be used to collect each sample, it is not anticipated that any equipment will be decontaminated in the field.

8.0 SAMPLE COLLECTION, PREPARATION, CUSTODY AND SHIPMENT

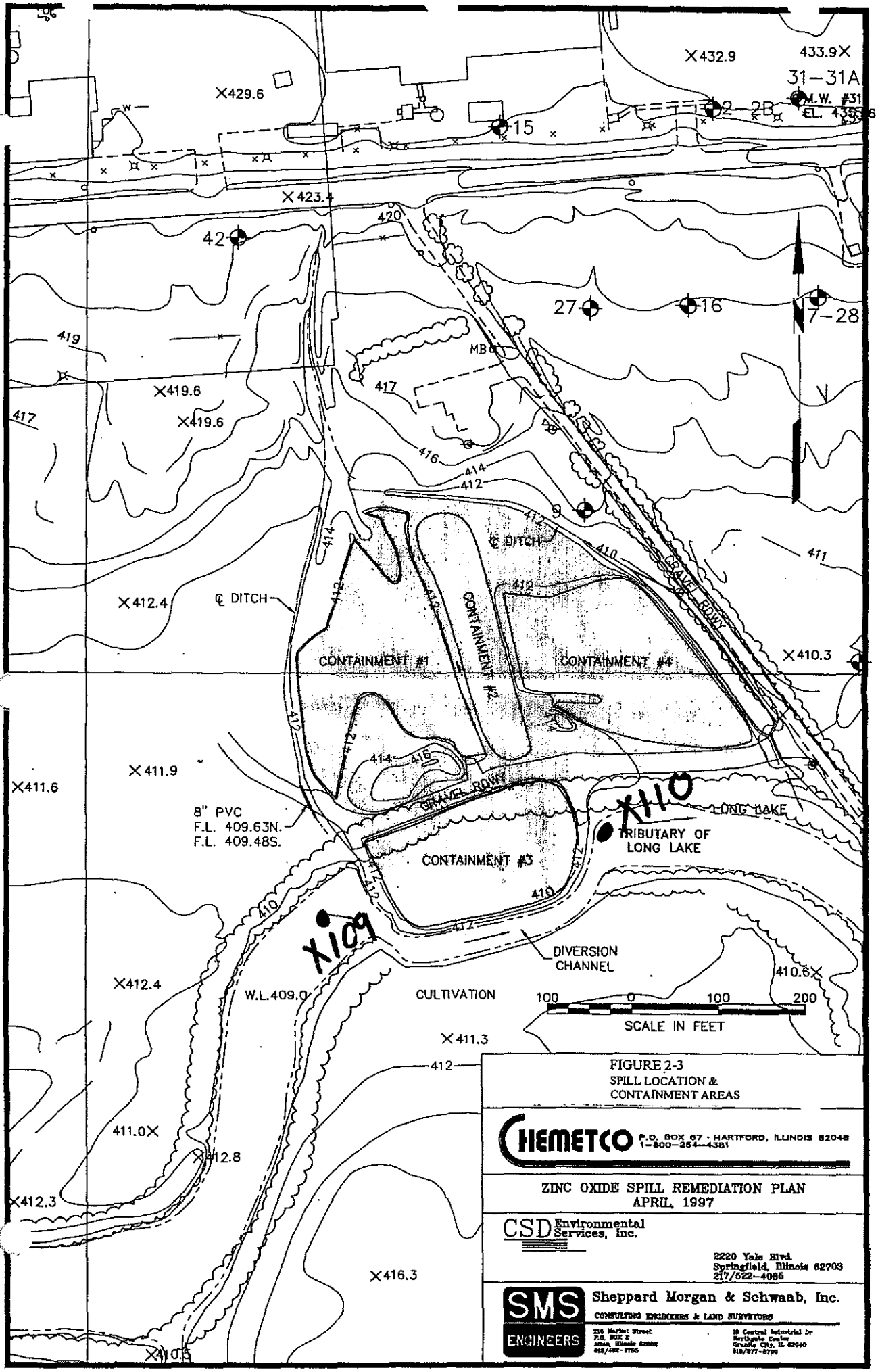


FIGURE 2-3
SPILL LOCATION &
CONTAINMENT AREAS

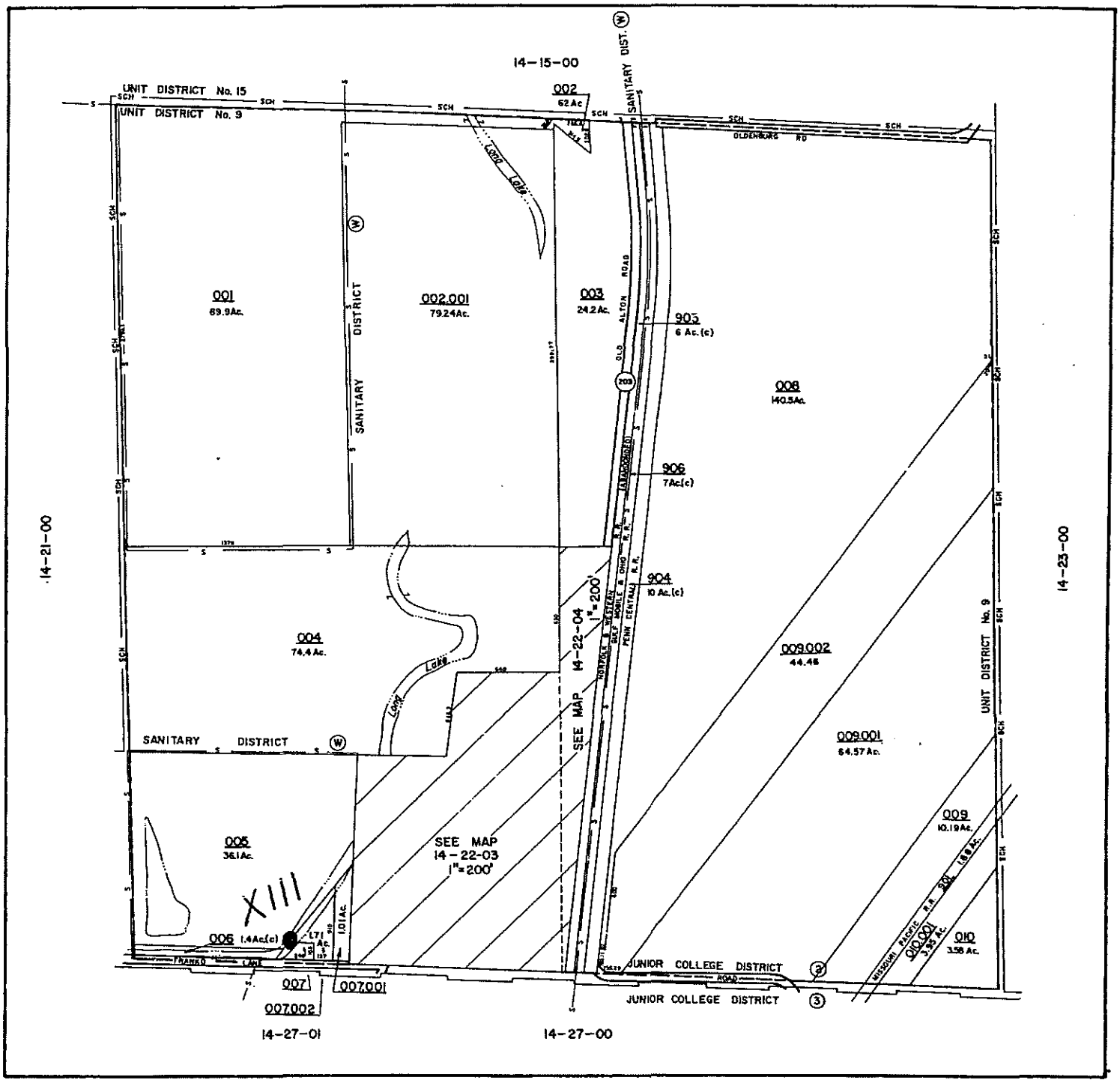
CHEMETCO P.O. BOX 67 · HARTFORD, ILLINOIS 62048
1-800-254-4381

ZINC OXIDE SPILL REMEDIATION PLAN
APRIL, 1997

CSD Environmental Services, Inc.
2220 Yale Blvd.
Springfield, Illinois 62703
217/522-4066

SMS ENGINEERS
Sheppard Morgan & Schwaab, Inc.
CONSULTING ENGINEERS & LAND SURVEYORS
216 Market Street
P.O. BOX 2
Alton, Illinois 62002
618/462-8750
10 Central Industrial Dr
Northgate Center
Granite City, IL 62040
618/877-8700

FIGURE 4-1



CHOUTEAU TOWNSHIP

MADISON COUNTY, ILLINOIS

LEGEND

STATE OR COUNTY LINE	EASEMENT LINE	ORIGINAL SUBDIVISION BLOCK NO.	[23]	DIMENSION IN FEET (Measured)	66.6 (m)
TOWNSHIP, CITY, TOWN LINE	PROPERTY LINE	ORIGINAL SUBDIVISION LOT & NO.	-+-///	INTERSTATE HIGHWAY	70
SECTION LINE	LAND HOOK	AREA IN ACRES (From Deed)	10.5 Ac.	U S HIGHWAY	66
HIGHWAY & STREET R/W	WATER	AREA IN ACRES (Calculated)	10 Ac.(c)	ILLINOIS STATE HIGHWAY	3
BLOCK LIMIT LINE	BLOCK NO. 100	DIMENSION IN FEET (From Deed)	16.5	COUNTY HIGHWAY	16
RAILROAD R/W	PARCEL NO. 023	DIMENSION IN FEET (Scaled)	66 (±)	STREET OR TOWN ROAD	BY NAME

SPECIAL DISTRICTS

TYPE	SYMBOL	CODE	NAME
FIRE	—F—	E	MITCHEL
LIGHT	—L—		
SCHOOL	—SCH—	9 (2)	UNIT DISTRICT JUNIOR COLLEGE DISTRICT No. 536
SEWER	—S—	(W)	SPECIAL SERVICE AREA NO 1
WATER	—W—		
PARK	—P—		
VOTING	—V—		

CLT BALANCED GOVERNMENTAL SERVICES

Tax Mapping Division

COLE LAYER TRUMBLE COMPANY
AN AMERICAN APPRAISAL ASSOCIATES CO.

REAL PROPERTY MAP
PREPARED FOR
MADISON COUNTY BOARD MEMBERS
Maps & Plats Department
COUNTY OF MADISON

DATE OF MAP: APRIL 25, 1973
DATE OF REVISION:

SCALE: 1"=400'

16	15	14
21	22	23
28	27	26

CONGRESSIONAL TOWNSHIP NO.

SECTION 22

TOWN 04 NORTH, RANGE 09 WEST

14-22-00
MAP NUMBER

FIGURE 4-2

1100748

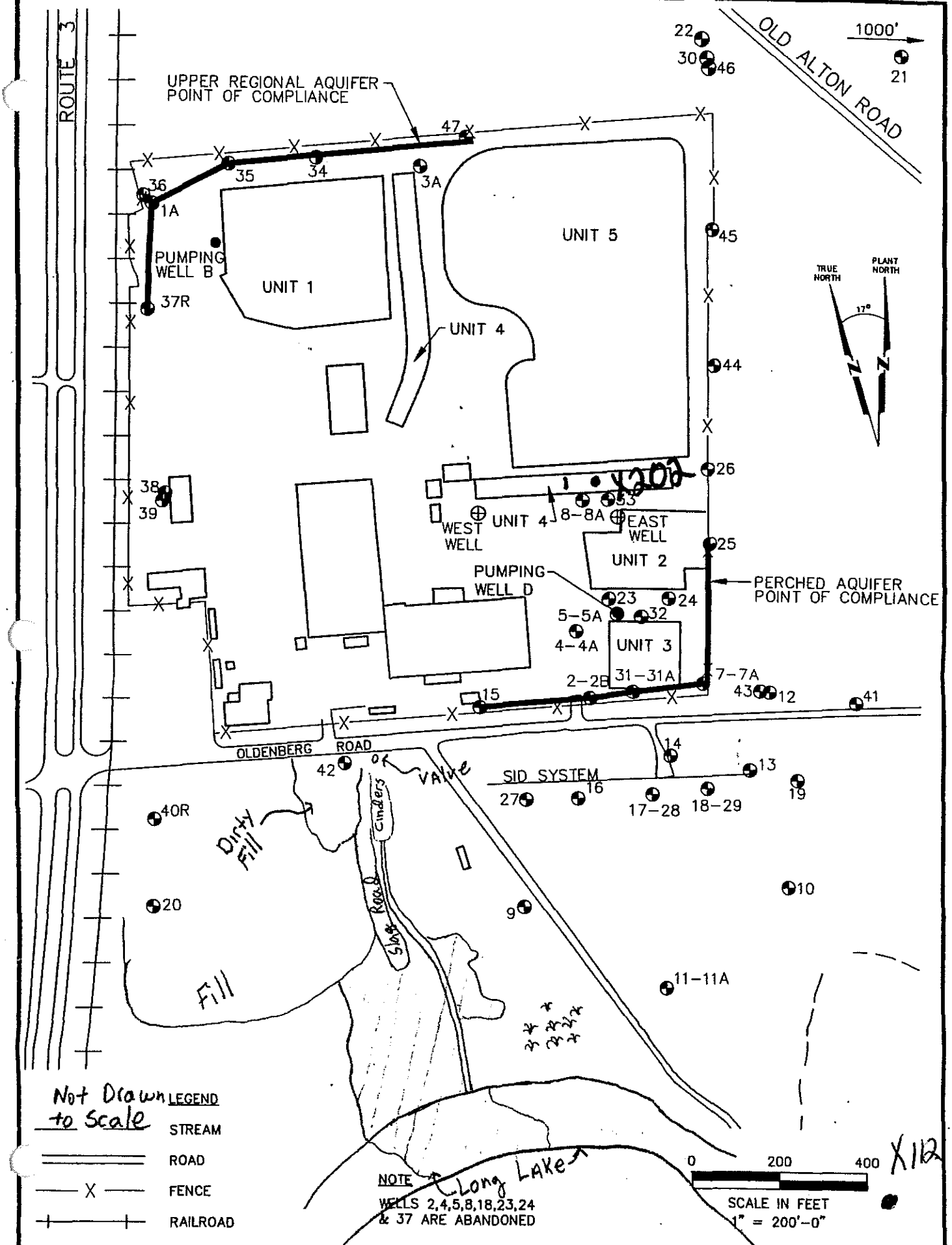


FIGURE 4-3

FIGURE B-5
MONITORING WELLS, PUMPING WELLS
& POINT OF COMPLIANCE

8.0 SAMPLE COLLECTION, PREPARATION, CUSTODY AND SHIPMENT

The samples collected by the IEPA sampling team will remain in the custody of the IEPA sampling team leader until shipment to the laboratory. The sample containers supplied by the contract laboratory will be labeled with the following information:

1. Field sample number
2. Date
3. Time
4. Sampler initials
5. Sample location
6. IEPA site number

Each sample container will be sealed on-site with evidence tape. The sealers initials, date and time of sealing will be marked on the evidence tape. A Unified Sampling Form (USF) will accompany the samples from the point of origin to the laboratory. All samples collected of Long Lake will be packaged at the Collinsville Regional Office and self transported to ARDL, Inc. P.O. Box 1566 Mt. Vernon Airport Road Mt. Vernon, Illinois.

9.0 ANALYTICAL REQUIREMENTS

The analytical methods, preservatives and holding time requirements are presented in TABLE 9-1.

TABLE 9-1
ANALYTICAL METHODS, SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

Parameters	Analytical Methods	Matrix	Preservative	Holding Time	Container
dioxin and furan	Sample Analysis: SW-846 Method 8290A	sediment, soil and sludge	cool at 4^0C	7-14 days	two (2) 8 ounce glass jars w/Teflon lids

10.0 PROJECT SCHEDULE AND PROJECT ORGANIZATION

The IEPA sampling team will be made up of the following personnel:

1. Chris Cahnovsky - Team Leader
2. Tom Miller
3. John Senjan

The sampling team's Site Safety Plan is included in Appendix 2.

11.0 REFERENCES

1. United State Department of Interior Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, December 1979.

2. United State Department of Interior Fish and Wildlife Service, Wetlands Inventory for aerial photograph of Wood River, ILL.-Mo. March 1985.

APPENDIX A

SITE SAFETY PLAN
for
SMALL-SCALE, SHORT-DURATION HAZARDOUS WASTE OPERATIONS

I. SITE OVERVIEW

Site Name
Chemetco, Inc. / Long Lake

Location
Rt 3 and Oldenburg Rd / Old Alton Rd + Franko Ln.

Tasks to be accomplished:

Task A
Obtain 3 sediment Samples from Long Lake

Task B
Obtain 1 Back Ground Soil Sample

Task C
Obtain 1 Zinc Oxide Sludge Sample

Task D

Start Date/Time:		Complete Date/Time:	

Site Description/History
Secondary Copper Smelter

Topography
Industrial, Agricultural & wet land

Surrounding Population
Industrial, Residential

Additional Information

II. PERSONNEL

	Duty/Name
1	Sampler - Chris Cahnovsky
2	Sampler - Tom Millar
3	Sampler - John Senjan
4	
5	
6	

III. HAZARD EVALUATION

Chemical hazards anticipated:

Chemical Name	PEL	IDLH	IP	Relative Response	LEL	Route of Entry
Lead	0.100 mg/m^3	100 mg/m^3	N/A	N/A	NA	Inh/Inj

Chemical Name	PEL	IDLH	IP	Relative Response	LEL	Route of Entry
Cadmium	0.005 mg/m^3	9 mg/m^3	N/A	N/A	N/A	Inh/Inj

Chemical Name	PEL	IDLH	IP	Relative Response	LEL	Route of Entry
Zinc	15 mg/m^3	500 mg/m^3	N/A	N/A	N/A	Inh/Inj

Chemical Name	PEL	IDLH	IP	Relative Response	LEL	Route of Entry
Copper	1 mg/m^3	100 mg/m^3	N/A	N/A	N/A	Inh/Inj

Chemical Name	PEL	IDLH	IP	Relative Response	LEL	Route of Entry
Zinc Oxide	15mg/m³	500mg/m³	n/a	n/a	n/a	Inh/Inj

Physical hazards anticipated:

Hazard:	Heat - Stress
Hazard control:	Drink water + Breaks

Hazard:	
Hazard control:	

Hazard:	
Hazard control:	

Hazard:	
Hazard control:	

IV. SITE CONTROL

Description of Exclusion Zone and Boundaries (Site Map Attached)

Description of Contamination Reduction Zone and Boundaries

Description of Support Zone and Boundaries

Hand signals
1. Hands gripping throat ---------- Out of air, can't breathe 2. Grip partner's wrist or both hands around waist ---------- Leave area immediately 3. Hands on top of head ---------- Need assistance 4. Thumbs up ---------- OK, I am all right, I understand 5. Thumbs down ---------- No, negative

Standard Operating Procedures: A, D, F, G.

A. Sampling procedures: Conduct sampling in accordance with the IEPA BOL Sampling Procedures Guidance Manual.

B. Excavations: if excavations will be made, comply with the Underground Utility Facilities Damage Prevention Act by contacting JULIE at least two working days in advance at 800-892-0123. The Act defines "excavation" as "...any operation in which earth, rock, or other material in or on the ground is moved, removed, or otherwise displaced by means of any tools...."

C. Permit-required Confined Spaces: A permit-required confined space is an area that has limited means for entry and exit, was not designed for continuous employee occupancy, and has the potential to contain a serious health or safety hazard (usually a hazardous atmosphere). Examples include manholes, tanks, vaults, excavations. IEPA personnel are not authorized to enter permit-required confined spaces.

D. Heat Stress: At temperatures above 70 degrees F., especially when PPE is used, heat stress is often the greatest site hazard. Provide appropriate cooling equipment, cooled drinking fluids, and frequent breaks. Prevent and treat heat stress in accordance with your first aid training.

E. Material Safety Data Sheets: Obtain MSDS for known chemical hazards and attach for review by all site personnel.

F. All personnel arriving or departing the site should log in and out with the Record-keeper. All activities on site must be cleared through the Project Team Leader. There will be a minimum of two people assigned to each task (buddy system).

G. Normal and Emergency Communications: A cell phone is mandatory.

H. If adverse weather is possible, monitor a local radio broadcast station or other service to stay abreast of the weather.

I. All operations and equipment will comply with OSHA Regulations 29 CFR 1910.120 and other applicable elements of OSHA 29 CFR 1910 and 1926. Before site operations begin all employees involved in these operations will have read and understood this site safety plan.

J. Training and medical monitoring: All routine site personnel are required 40-hour HAZWOPER training and medical monitoring. Employees with 24-hour training may perform specific tasks, provided that it is ensured that they will not be exposed to health hazards above permissible exposure limits. Visitors or support personnel who remain in the support zone are not required health and safety training.

K. Other:

V. PERSONAL PROTECTIVE EQUIPMENT

Based on evaluation of potential hazards, the following levels of personal protective equipment have been designated for the applicable work areas or tasks. No changes to the specified levels of protection shall be made without the approval of the site safety officer and the project team leader.

Work Area/Zone	Job Function/Task	Level of Protection: B C D Other
East Canal	Sampling	Modified D

Work Area/Zone	Job Function/Task	Level of Protection: B C D Other
Levy Lake	Sampling	Modified D

Work Area/Zone	Job Function/Task	Level of Protection: B C D Other

Work Area/Zone	Job Function/Task	Level of Protection: B C D Other

The following specific PPE items have been selected:

X	Latex gloves		Nitrile gloves		Neoprene gloves
	Butyl gloves		Silver Shield gloves		Hazmax Chemical boots
	Latex outer boots	X	Tyvek coveralls		Saranex coveralls
X	APR Respirator		SCBA	X	Hardhat
X	APR Cartridge:	X	Safety Glasses		Safety Goggles
	Ear Protection		Cotton Coveralls		Other:
	Other:	X	Other: hip waders		Other:

VI. AIR MONITORING

The following air monitoring instruments shall be used on-site at the specified intervals:

	Instrument type	Frequency
	PID	
	TVA	
	Oxygen indicator/Combustible	
	Detector tubes:	
	Personal air pump	
	Other:	

Action level responses
Unknown gas/vapor PID/FID reading above background to 5 ppm: use level C protection
Unknown gas/vapor PID/FID reading 5 to 500 ppm: use level B protection
Unknown gas/vapor PID/FID reading above 500 ppm: evacuate/control the hazard
Known gas/vapor PID/FID reading greater than half the PEL: use level C protection
Known gas/vapor PID/FID reading IDLH: use SCBA/control the hazard
Oxygen below 19.5%: use SCBA/control the hazard
Combustible gas indicator: at or above 10% LEL: evacuate.
Other:

VII. DECONTAMINATION PROCEDURES

Wear disposable coveralls, disposable outer boots, and disposable outer gloves. Avoid walking on, kneeling on, or sitting on contaminated surfaces. Avoid contaminating any non-disposable clothing or equipment. Use private contractor's decontamination facilities if established. Decontamination stations shall be set up before personnel enter the exclusion zone. Personnel and equipment leaving the exclusion zone shall be thoroughly decontaminated. Any PPE utilized will be removed, bagged, and if possible left on site. If this is not possible, the bagged PPE will be brought back to the

Agency. Decon equipment includes garbage bags, "Wet Ones," paper towels, Visqueen, Alconox, wash tubs, water, pressure water sprayer.

The following example of personal decontamination is based on the exclusive use of disposable boot covers, gloves, and coveralls.
Steps:

1. Segregated equipment drop
2. Remove outer booties and outer gloves; remove the most contaminated first
3. Remove coveralls
4. Remove first pair of inner gloves
5. Remove hard hat
6. Remove respirator
7. Remove second pair of inner gloves
8. Replace hard hat and put on eye protection until leaving the site
9. Wash hands

When possible use disposable sampling equipment and leave at the site, if possible. Otherwise, equipment should be bagged, and brought back to the agency for disposal. Reusable, non-disposable equipment (stainless steel spoons, split spoons, measuring tape, etc) will be decontaminated before removal from the site. The minimum decontamination procedure for all equipment is as follows:

1. Water rinse
2. Soap wash (Alconox)
3. Water rinse
4. Air dry
5. Seal with aluminum foil

VIII. EMERGENCY PROCEDURES

The Site Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed.

Written Directions to the Selected Hospital (Map Attached)
Alton Memorial Hospital Rt 3 North to Hwy 140

Personnel Injury in the Exclusion Zone: Upon notification of an injury in the Exclusion Zone, all site personnel shall assemble at the decontamination line. The rescue team will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The Site Safety Officer and Project Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. Appropriate first aid shall be initiated, and contact should be made for an ambulance and with the designated medical facility (if required). No persons

shall reenter the Exclusion Zone until the cause of the injury or symptoms is determined.

Personnel Injury in the Support Zone: Upon notification of an injury in the Support Zone, the Project Team Leader and Site Safety Officer will assess the nature of the injury. If the cause of the injury does not affect the performance of site personnel, operations may continue, with the on-site first aid initiated and necessary follow-up as stated above. If the injury increases the risk to others, all site personnel shall move to the decontamination line for further instructions. Activities on site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion on site, all site personnel shall be assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Personal Protective Equipment Failure: If any site worker experiences a failure or malfunction of protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Project Team Leader and Site Safety Officer shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

In all situations, when an on-site emergency results in evacuation of the Exclusion Zone, personnel shall not re-enter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed.
3. The Site Safety Plan has been reviewed
4. Site personnel have been briefed on any changes in the Site Safety Plan.

First-aid equipment available on-site: First-aid kit, emergency eye wash.

List of emergency phone numbers	
Police:	911 Madison County Sheriff 692-4443
Fire:	911
Ambulance:	911
Hospital:	Alice Hyde Medical 463-7311

IX. CERTIFICATION

Personnel signing below certify that they understand the site work plan, understand this site safety plan, and have completed the required training and medical monitoring.

Required:	40-HourTraining:	X	24-Hour:		None:		Medical monitoring required (yes/no):	Y
Completed:	40-Hour:	X	24-Hour:		None:		Medical monitoring completed (yes/no):	Y
Duty/Name/Signature:	Chris Cahinovsky							

Required:	40-HourTraining:	X	24-Hour:		None:		Medical monitoring required (yes/no):	Y
Completed:	40-Hour:	X	24-Hour:		None:		Medical monitoring completed (yes/no):	Y
Duty/Name/Signature:	Tom Miller							

Required:	40-HourTraining:	X	24-Hour:		None:		Medical monitoring required (yes/no):	Y
Completed:	40-Hour:	Y	24-Hour:		None:		Medical monitoring completed (yes/no):	Y
Duty/Name/Signature:	John Sejai							

Required:	40-HourTraining:		24-Hour:		None:		Medical monitoring required (yes/no):	
Completed:	40-Hour:		24-Hour:		None:		Medical monitoring completed (yes/no):	
Duty/Name/Signature:								

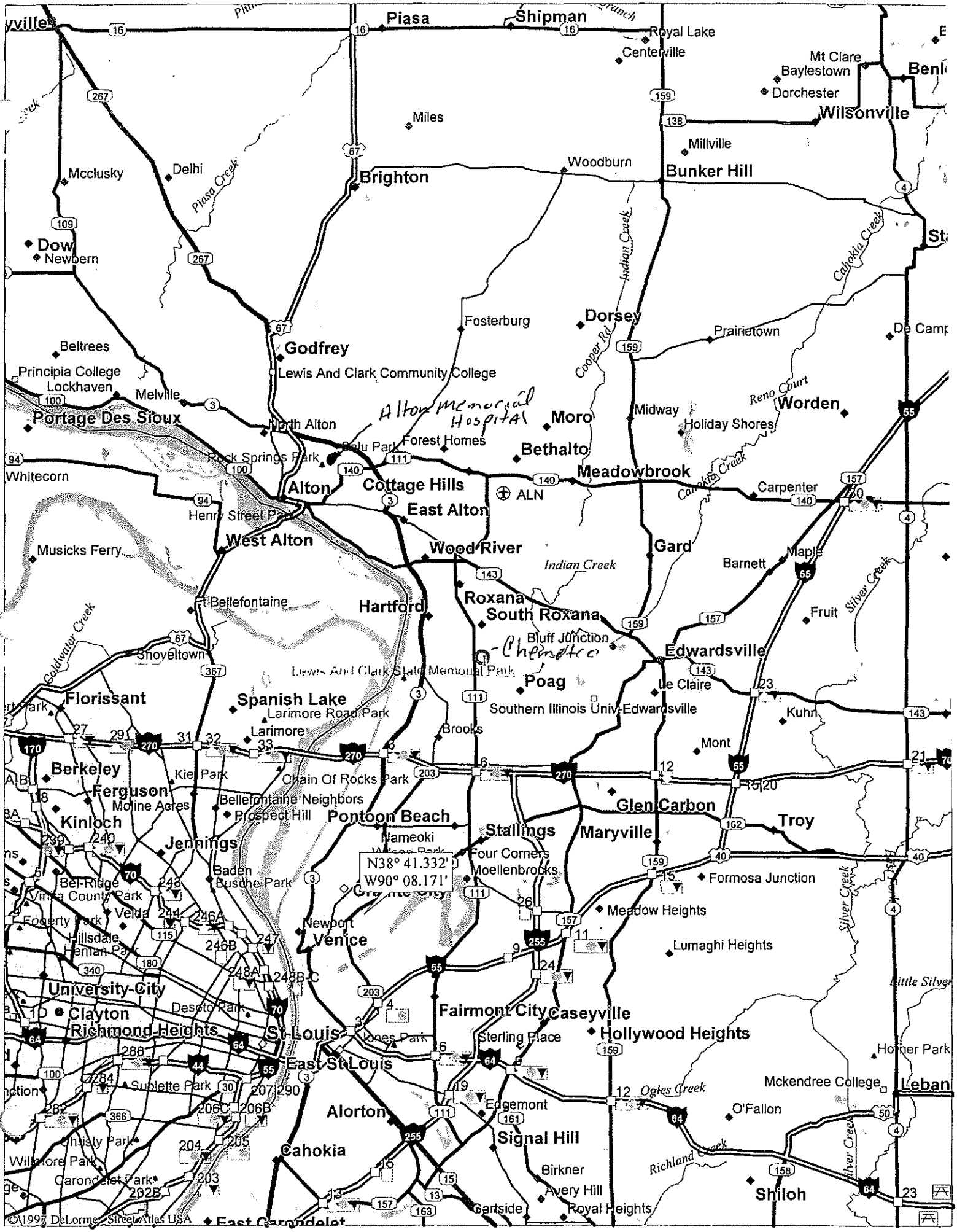
Required:	40-HourTraining:		24-Hour:		None:		Medical monitoring required (yes/no):	
Completed:	40-Hour:		24-Hour:		None:		Medical monitoring completed (yes/no):	
Duty/Name/Signature:								

Required:	40-HourTraining:		24-Hour:		None:		Medical monitoring required (yes/no):	
Completed:	40-Hour:		24-Hour:		None:		Medical monitoring completed (yes/no):	
Duty/Name/Signature:								

X. APPENDICES

Appendix A: Site Map

Appendix B: Route to Hospital


Piasa
Shipman
Royal Lake
Centerville
Mt Clare
Baylestown
Dorchester
Wilsonville
Miles
Millville
Woodburn
Bunker Hill
Mcclusky
Delhi
Brighton
Piasa Creek
Indian Creek
Cahokia Creek
Dow
Newbern
Fosterburg
Dorsey
Prairietown
Beltrees
Godfrey
Lewis And Clark Community College
Principia College
Lockhaven
Melville
Portage Des Sioux
North Alton
Alton Memorial Hospital
Moro
Midway
Holiday Shores
Worden
Reno Court
Cooper Rd
Forest Homes
Bethalto
Rock Springs Park
Whitecorn
Alton
Cottage Hills
ALN
Meadowbrook
Carpenter
East Alton
Henry Street Park
West Alton
Musicks Ferry
Wood River
Gard
Barnett
Maple
Indian Creek
Roxana
South Roxana
Hartford
Bellefontaine
Caldwater Creek
Bluff Junction
Edwardsville
Fruit
Silver Creek
Shoveltown
Lewis And Clark State Memorial Park
Poag
Le Claire
Southern Illinois Univ-Edwardsville
Florissant
Spanish Lake
Larimore Road Park
Larimore
Brooks
Kuhn
Mont
Berkeley
Kiel Park
Chain Of Rocks Park
Ferguson
Moline Acres
Bellefontaine Neighbors
Prospect Hill
Glen Carbon
Troy
Kinloch
Pontoon Beach
Nameoki
Stallings
Maryville
Jennings
Four Corners
Moellenbrocks
Formosa Junction
Baden
Busche Park
Bel-Ridge
Vinita County Park
Velda
Meadow Heights
Newport
Venice
Lumaghi Heights
Hillsdale
Henian Park
University City
Clayton
Richmond Heights
DeSoto Park
St Louis
Fairmont City
Caseyville
Hollywood Heights
Sterling Place
Jones Park
East St Louis
Mckendree College
Lebanon
Sublette Park
Ogles Creek
Edgemont
O'Fallon
Alorton
Signal Hill
Cahokia
Birkner
Avery Hill
Richland Creek
Shiloh
Garfside
Royal Heights
East Carondelet
N38° 41.332'
W90° 08.171'
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FINAL FIELD SAMPLING AND ANALYSIS REPORT
ORGANIC SAMPLING
LONG LAKE - MITCHELL, ILLINOIS
OCTOBER 1999

On August 10, 1999 the Illinois Environmental Protection Agency sampled zinc oxide sludge from the East Cooling Canal, sediment from Long Lake and obtained a background soil sample at the Chemetco facility for the presents of dioxins and furans. On July 16, 1999, the Illinois Department of Natural Resources, Division of Fisheries obtained fish samples from Long Lake. The IDNR was contacted by the Illinois Environmental Protection Agency to obtain fish samples for dioxins and furans analysis.

A total of three sediment samples were taken during this sampling event. One sample was taken about 20 feet west of Containment Area #3 and one sample was taken about 6 feet east of Containment Area #3. Containment Area #3 is the part of Long Lake impounded by Chemetco to contain the gross zinc oxide contamination to the lake. The third sediment sample was taken about 15 feet north of Franko Lane. The sample depths of the sediment samples were 0-10 inches. One background soil sample was taken in the front yard of Chemetco's "farmhouse". One sample of zinc oxide sludge was taken from the bottom of the east side of the East Cooling Water Canal.

The IDNR used a shock boat to obtain the fish for sampling. The fish samples were obtained north of Franco Lane and south of the "slag road". In this section big buffalo, big carp and small buffalo were obtained. A filet sample of the big buffalo and the big carp were analyzed for dioxins and furans.

The sample results were forwarded to the Office of Chemical Safety's Toxicological Assessment Unit for interpretation. Sample X109, from the east side of containment Area #3 showed Dioxin Equivalent levels of 123 part per trillion (ppt). Sample X202 of the zinc oxide sludge from the East Cooling Canal showed a Dioxin Equivalent levels of 232 ppt. The dioxin levels of the fish samples were below background levels.